

## APPENDIX B

### EPA Methods of Environmental Water Analysis

**Table B-1.** Inorganic constituents of concern in water samples, the analytical methods used to determine their concentrations, and their contractual reporting limits.

Constituent of concern	Analytical method	Reporting limit <sup>(a,b)</sup>
<b>Metals and minerals (mg/L)</b>		
All alkalinites	SM 2310	1
Aluminum	EPA 200.7 or 200.8	0.05 or 0.2
Ammonia nitrogen (as N)	EPA 350.1 or SM 4500-NH3	0.03 or 0.1
Antimony	200.8	0.005
Arsenic	200.8	0.002
Barium	200.8	0.025 or 0.01
Beryllium	200.8 or SM 3113B	0.0005 or 0.0002
Boron	EPA 200.7	0.05
Bromide	EPA 300.0	0.5
Cadmium	EPA 200.8	0.0005
Calcium	EPA 200.7	0.5
Chloride	EPA 300.0	1 or 0.5
Chlorine (residual)	SM-4500-CL	0.1
Chromium	200.8	0.01 or 0.001
Chromium(VI)	EPA 218.4 or 7196	0.002
Cobalt	EPA 200.7 or 200.8	0.025 or 0.05
Copper	200.7 or 200.8	0.001, 0.01 or 0.05
Cyanide	EPA 335.4 or 4500-CN	0.02
Fluoride	EPA 300	0.05
Hardness, total (as CaCO <sub>3</sub> )	SM 2320B	1
Iron	EPA 200.7 or 200.8	0.1
Lead	EPA 200.8	0.002 or 0.005
Magnesium	EPA 200.7 or 200.8	0.5
Manganese	EPA 200.7 or 200.8	0.03
Mercury	EPA 245.2 or 245.1	0.0002
Molybdenum	EPA 200.7 or 200.8	0.025
Nickel	EPA 200.7, 200.8 or SM 3113B	0.002, 0.005 or 0.1
Nitrate (as NO <sub>3</sub> )	EPA 353.2 300.0 or SM 4500-NO3	0.5
Nitrite (as NO <sub>2</sub> )	EPA 353.2 or 300.0, SM 4500-NO2	0.5
Ortho-phosphate	EPA 300.0 or SM4500	0.05
Perchlorate	EPA 314.0	0.004
Potassium	EPA 200.7	1
Selenium	EPA 200.8	0.002
Silver	EPA 200.8	0.001 or 0.0005
Sodium	EPA 200.7	1 or 0.1
Sulfate	EPA 300.0	1
Surfactants	SM 5540C or EPA 425.1	0.5
Thallium	EPA 200.8	0.001

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**Table B-1 (cont.).** Inorganic constituents of concern in water samples, the analytical methods used to determine their concentrations, and their contractual reporting limits.

Constituent of concern	Analytical method	Reporting limit <sup>(a,b)</sup>
<b>Metals and minerals (mg/L) (cont.)</b>	Total dissolved solids	SM 2540C
	Total suspended solids	SM 2540D
	Total Kjeldahl nitrogen (as N)	EPA 351.2 or SM 4500-Norg
	Total phosphorus (as P)	EPA 365.4 or SM 4500-P
	Vanadium	EPA 200.7 or 200.8
<b>General indicator parameters</b>	Zinc	EPA 200.7 or 200.8
	pH (pH units)	SM 4500-H+
	Biochemical oxygen demand (mg/L)	SM 5210B
	Conductivity ( $\mu\text{S}/\text{cm}$ )	EPA 120.1
	Chemical oxygen demand (mg/L)	EPA 410.4
	Dissolved oxygen (mg/L)	SM 4500-O G
	Total organic carbon (mg/L)	EPA 9060 or SM 5310B
	Total organic halides (mg/L)	EPA 9020
	Toxicity, acute (fathead minnow)	EPA 600/4-AB5-013
	Toxicity, chronic (fathead minnow)	EPA 1000
<b>Radioactivity (Bq/L)</b>	Toxicity, chronic (daphnid)	EPA 1002
	Toxicity, chronic (green algae)	EPA 1003
<b>Radioisotopes (Bq/L)</b>	Gross alpha	EPA 900
	Gross beta	EPA 900
	Americium-241	U-NAS-NS-3050
	Plutonium-238	U-NAS-NS-3050
	Plutonium-239+240	U-NAS-NS-3050
	Radon-222	EPA 913
	Radium-226	EPA 903
	Radium-228	EPA 904
	Thorium-228	U-NAS-NS-3050
	Thorium-230	U-NAS-NS-3050
	Thorium-232	U-NAS-NS-3050
	Tritium	EPA 906
	Uranium-234	EPA 907
	Uranium-235	EPA 907
	Uranium-238	EPA 907

(a) The number of decimal places displayed in this table vary by constituent. These variations reflect regulatory agency permit stipulations, or the applicable analytical laboratory contract under which the work was performed, or both.

(b) These reporting limits are for water samples with low concentrations of dissolved solids. If higher concentrations are present, limits are likely to be higher.

## B. EPA Methods of Environmental Water Analysis

**Table B-2.** Organic constituents of concern in water samples and their contractual reporting limits of concentration, sorted by analytical method.

Constituent of concern	Reporting limit (µg/L) <sup>(a,b)</sup>	Constituent of concern	Reporting limit (µg/L) <sup>(a,b)</sup>
<b>EPA Method 1664</b>		Dibromochloromethane	0.2
Oil & Grease	1000	Dibromomethane	0.2
<b>EPA Method 420.1</b>		Dichlorodifluoromethane	0.2
Phenolics	5	Ethylbenzene	0.2
<b>EPA Method 502.2</b>		Freon 113	0.2
1,1,1,2-Tetrachloroethane	0.2	Hexachlorobutadiene	0.2
1,1,1-Trichloroethane	0.2	Isopropylbenzene	0.2
1,1,2,2-Tetrachloroethane	0.2	<i>m</i> - and <i>p</i> -Xylene isomers	0.2
1,1,2-Trichloroethane	0.2	Methylene chloride	0.2
1,1-Dichloroethane	0.2	<i>n</i> -Butylbenzene	0.2
1,1-Dichloroethene	0.2	<i>n</i> -Propylbenzene	0.2
1,1-Dichloropropene	0.2	Naphthalene	0.2
1,2,3-Trichlorobenzene	0.2	<i>o</i> -Xylene	0.2
1,2,3-Trichloropropane	0.2	Isopropyl toluene	0.2
1,2,4-Trichlorobenzene	0.2	<i>sec</i> -Butylbenzene	0.2
1,2,4-Trimethylbenzene	0.2	Styrene	0.2
1,2-Dichlorobenzene	0.2	<i>tert</i> -Butylbenzene	0.2
1,2-Dichloroethane	0.2	Tetrachloroethene	0.2
1,2-Dichloropropane	0.2	Toluene	0.2
1,3,5-Trimethylbenzene	0.2	<i>trans</i> -1,2-Dichloroethene	0.2
1,3-Dichlorobenzene	0.2	<i>trans</i> -1,3-Dichloropropene	0.2
1,3-Dichloropropane	0.2	Trichloroethene	0.2
1,4-Dichlorobenzene	0.2	Trichlorofluoromethane	0.2
2,2-Dichloropropane	0.2	Vinyl chloride	0.2
2-Chlorotoluene	0.2	<b>EPA Method 507</b>	
4-Chlorotoluene	0.2	Alachlor	0.5
Benzene	0.2	Atraton	0.5
Bromobenzene	0.2	Atrazine	0.5
Bromochloromethane	0.2	Bromacil	0.5
Bromodichloromethane	0.2	Butachlor	0.5
Bromoform	0.2	Diazinon	0.5
Bromomethane	0.2	Dichlorvos	0.5
Carbon tetrachloride	0.2	Ethoprop	0.5
Chlorobenzene	0.2	Merphos	0.5
Chloroethane	0.2	Metolachlor	0.5
Chloroform	0.2	Metribuzin	0.5
Chloromethane	0.2	Mevinphos	0.5
<i>cis</i> -1,2-Dichloroethene	0.2	Molinate	0.5
<i>cis</i> -1,3-Dichloropropene	0.5	Prometon	0.5

## B. EPA Methods of Environmental Water Analysis

**Table B-2 (cont.).** Organic constituents of concern in water samples and their contractual reporting limits of concentration, sorted by analytical method.

Constituent of concern	Reporting limit ( $\mu\text{g/L}$ ) <sup>(a,b)</sup>	Constituent of concern	Reporting limit ( $\mu\text{g/L}$ ) <sup>(a,b)</sup>		
<b>EPA Method 507 (cont.)</b>					
Prometryn	0.5	Aldrin	0.05		
Simazine	0.5	BHC, alpha isomer	0.05		
Terbutryn	0.5	BHC, beta isomer	0.05		
<b>EPA Method 547</b>					
Glyphosate	20	BHC, delta isomer	0.05		
<b>EPA Method 601</b>					
1,1,1-Trichloroethane	0.5	BHC, gamma isomer (Lindane)	0.05		
1,1,2,2-Tetrachloroethane	0.5	Chlordane	0.2		
1,1,2-Trichloroethane	0.5	Dieldrin	0.1		
1,1-Dichloroethane	0.5	Endosulfan I	0.05		
1,1-Dichloroethene	0.5	Endosulfan II	0.1		
1,2-Dichlorobenzene	0.5	Endosulfan sulfate	0.1		
1,2-Dichloroethane	0.5	Endrin	0.1		
1,2-Dichloroethene (total)	0.5	Endrin aldehyde	0.1		
1,2-Dichloropropane	0.5	Heptachlor	0.05		
1,3-Dichlorobenzene	0.5	Heptachlor epoxide	0.05		
1,4-Dichlorobenzene	0.5	Methoxychlor	0.5		
2-Chloroethylvinylether	0.5	4,4'-DDD	0.1		
Bromodichloromethane	0.5	4,4'-DDE	0.1		
Bromoform	0.5	4,4'-DDT	0.1		
Bromomethane	0.5	Toxaphene	1		
Carbon tetrachloride	0.5	<b>EPA Method 615</b>			
Chlorobenzene	0.5	2,4,5-T	0.5		
Chloroethane	0.5	2,4,5-TP (Silvex)	0.2		
Chloroform	0.5	2,4-D	1		
Chloromethane	0.5	2,4-Dichlorophenoxy acetic acid	2		
cis-1,2-Dichloroethene	0.5	Dalapon	10		
cis-1,3-Dichloropropene	0.5	Dicamba	1		
Dibromochloromethane	0.5	Dichloroprop	2		
Dichlorodifluoromethane	0.5	Dinoseb	1		
Freon-113	0.5	MCPP	250		
Methylene chloride	0.5	MCPP	250		
Tetrachloroethene <i>trans</i> -1,2-	0.5	<b>EPA Method 624</b>			
Dichloroethene <i>trans</i> -1,3-	0.5	1,1,1-Trichloroethane	1		
Dichloropropene	0.5	1,1,2,2-Tetrachloroethane	1		
Trichloroethene	0.5	1,1,2-Trichloroethane	1		
Trichlorofluoromethane	0.5	1,1-Dichloroethane	1		
Vinyl chloride	0.5	1,1-Dichloroethene	1		
		1,2-Dichlorobenzene	1		
		1,2-Dichloroethane	1		

## B. EPA Methods of Environmental Water Analysis

**Table B-2 (cont.).** Organic constituents of concern in water samples and their contractual reporting limits of concentration, sorted by analytical method.

Constituent of concern	Reporting limit ( $\mu\text{g/L}$ ) <sup>(a,b)</sup>	Constituent of concern	Reporting limit ( $\mu\text{g/L}$ ) <sup>(a,b)</sup>
<b>EPA Method 624 (cont)</b>		<b>EPA Method 625</b>	
1,2-Dichloroethene (total)	1	1,2,4-Trichlorobenzene	5
1,2-Dichloropropane	1	1,2-Dichlorobenzene	5
1,3-Dichlorobenzene	1	1,3-Dichlorobenzene	5
1,4-Dichlorobenzene	1	1,4-Dichlorobenzene	5
2-Butanone	20	2,4,5-Trichlorophenol	5
2-Chloroethylvinylether	20	2,4,6-Trichlorophenol	5
2-Hexanone	20	2,4-Dichlorophenol	5
4-Methyl-2-pentanone	20	2,4-Dimethylphenol	5
Acetone	10	2,4-Dinitrophenol	25
Benzene	1	2,4-Dinitrotoluene	5
Bromodichloromethane	1	2,6-Dinitrotoluene	5
Bromoform	1	2-Chloronaphthalene	5
Bromomethane	2	2-Chlorophenol	5
Carbon disulfide	1	2-Methylphenol	5
Carbon tetrachloride	1	2-Methyl-4,6-dinitrophenol	25
Chlorobenzene	1	2-Methylnaphthalene	5
Chloroethane	2	2-Nitroaniline	25
Chloroform	1	3,3'-Dichlorobenzidine	10
Chloromethane	2	3-Nitroaniline	25
cis-1,2-Dichloroethene	1	4-Bromophenylphenylether	5
cis-1,3-Dichloropropene	1	4-Chloro-3-methylphenol	10
Dibromochloromethane	1	4-Chloroaniline	10
Dibromomethane	1	4-Chlorophenylphenylether	5
Dichlorodifluoromethane	2	4-Nitroaniline	25
Ethylbenzene	1	4-Nitrophenol	25
Freon 113	1	Acenaphthene	25
Methylene chloride	1	Acenaphthylene	5
Styrene	1	Anthracene	5
Tetrachloroethene	1	Benzo[a]a nthracene	5
Toluene	1	Benzo[a]p yrene	5
Total xylene isomers	2	Benzo[b]f luoranthene	5
trans-1,2-Dichloroethene	1	Benzo[g,h,i]p erylene	5
trans-1,3-Dichloropropene	1	Benzo[k]fluoranthene	5
Trichloroethene	0.5	Benzoic acid	25
Trichlorofluoromethane	1	Benzyl alcohol	10
Vinyl acetate	1	Bis(2-chloroethoxy)methane	5
Vinyl chloride	1	Bis(2-chloroisopropyl)ether	5

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**Table B-2 (cont.).** Organic constituents of concern in water samples and their contractual reporting limits of concentration, sorted by analytical method.

Constituent of concern	Reporting limit (µg/L) <sup>(a,b)</sup>	Constituent of concern	Reporting limit (µg/L) <sup>(a,b)</sup>		
<b>EPA Method 625 (cont)</b>					
Bis(2-ethylhexyl)phthalate	5	Naled	1		
Butylbenzylphthalate	5	Phorate	1		
Chrysene	5	Prothiophos	1		
Di-n-butylphthalate	5	Ronnel	1		
Di-n-octylphthalate	5	Stirophos	1		
Dibenzo[a,h]anthracene	5	Trichloronate	1		
Dibenzofuran	5	<b>EPA Method 8260</b>			
Diethylphthalate	5	1,1,1,2-Tetrachloroethane	0.5		
Dimethylphthalate	5	1,1,1-Trichloroethane	0.5		
Fluoranthene	5	1,1,2,2-Tetrachloroethane	0.5		
Fluorene	5	1,1,2-Trichloroethane	0.5		
Hexachlorobenzene	5	1,1-Dichloroethane	0.5		
Hexachlorobutadiene	5	1,1-Dichloroethene	0.5		
Hexachlorocyclopentadiene	5	1,2,3-Trichloropropane	0.5		
Hexachloroethane	5	1,2-Dibromo-3-chloropropane	0.5		
Indeno[1,2,3-c,d]pyrene	5	1,2-Dichloroethane	0.5		
Isophorone	5	1,2-Dichloroethene (total)	0.5		
m- and p-Cresol	5	1,2-Dichloropropane	0.5		
N-Nitroso-di-n-propylamine	5	2-Butanone	0.5		
Naphthalene	5	2-Chloroethylvinylether	0.5		
Nitrobenzene	5	2-Hexanone	0.5		
Pentachlorophenol	5	4-Methyl-2-pentanone	0.5		
Phenanthrrene	5	Acetone	10		
Phenol	5	Acetonitrile	100		
Pyrene	5	Acrolein	50		
<b>EPA Method 632</b>					
Diuron	0.1	Acrylonitrile	50		
<b>EPA Method 8082</b>					
Polychlorinated biphenyls (PCBs)	0.5	Benzene	0.5		
<b>EPA Method 8140</b>					
Bolstar	1	Bromodichloromethane	0.5		
Chlorpyrifos	1	Bromoform	0.5		
Coumaphos	1	Bromomethane	0.5		
Demeton	1	Carbon disulfide	5		
Diazinon	1	Carbon tetrachloride	0.5		
Dichlorvos	1	Chlorobenzene	0.5		
Disulfoton	1	Chloroethane	0.5		
Ethoprop	1	Chloroform	0.5		
Fensulfothion	1	Chloromethane	0.5		
Fenthion	1	Chloroprene	5		
Merphos	1	Dibromochloromethane	0.5		
Methyl Parathion	1	Dichlorodifluoromethane	0.5		
Mevinphos	1	Ethanol	1000		

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**Table B-2 (cont.).** Organic constituents of concern in water samples and their contractual reporting limits of concentration, sorted by analytical method.

Constituent of concern	Reporting limit ( $\mu\text{g/L}$ ) <sup>(a,b)</sup>	Constituent of concern	Reporting limit ( $\mu\text{g/L}$ ) <sup>(a,b)</sup>
<b>EPA Method 8260 (cont)</b>			
Total xylene isomers	0.5	1,2,3,7,8,9-HxCDF	0.00025
Trichloroethene	0.5	1,2,3,7,8-PeCDD	0.0001
Trichlorofluoromethane	0.5	1,2,3,7,8-PeCDF	0.0001
Vinyl acetate	20	2,3,4,6,7,8-HxCDF	0.00025
Vinyl chloride	0.5	2,3,4,7,8-PeCDF	0.0001
cis-1,2-Dichloroethene	0.5	2,3,7,8-TCDD	0.0001
cis-1,3-Dichloropropene	0.5	2,3,7,8-TCDF	0.0001
trans-1,2-Dichloroethene	0.5	OCDD	0.0005
trans-1,3-Dichloropropene	0.5	OCDF	0.0005
<b>EPA Method 8290</b>			
1,2,3,4,6,7,8-HpCDD	0.00025	<b>EPA Method 8330B</b>	5 or 1
1,2,3,4,6,7,8-HpCDF	0.00025	HMX <sup>(c)</sup>	5 or 1
1,2,3,4,7,8,9-HpCDF	0.00025	RDX <sup>(d)</sup>	5
1,2,3,4,7,8-HxCDF	0.00025	TNT <sup>(e)</sup>	0.0001
1,2,3,6,7,8-HxCDD	0.00025	<b>EPA Method 9131 or Standard Method 9221</b>	
1,2,3,6,7,8-HxCDF	0.00025	Fecal coliform bacteria	1 to 2
1,2,3,7,8,9-HxCDD	0.00025	Total coliform bacteria	1 to 2

- (a) The number of decimal places displayed in this table vary by constituent. These variations reflect regulatory agency permit stipulations, the applicable analytical laboratory contract under which the work was performed, or both.
- (b) These reporting limits are for water samples with low concentrations of dissolved solids. If higher concentrations are present, limits are likely to be higher.
- (c) HMX is octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
- (d) RDX is hexahydro-1,3,5-trinitro-1,3,5-triazine.
- (e) TNT is 2,4,6-trinitrotoluene.
- (f) MPN = most probable number (of organisms).